

REMARKS

Claims 1-20 were examined and reported in the final Office Action. Claims 11-14 stand rejected under 35 U.S.C. § 112, 1st paragraph. Claims 1, 3, 11, 13, 15-17, 19 and 20 are rejected as anticipated by *Maenz* (GB 2,340,727). Claims 1-7, 9, 10, 11, 13, 15-17, 19 and 20 are rejected as obvious over *Maenz* with *Vanderbeke* (U.S. Pat. No. 5,443,979), *Winthrop* (U.S. Pat. No. 3,812,013) and/or *Mantha* (EP 57146). Claims 1-11 and 13-20 are rejected as obvious over *Maenz*, *Vanderbeke*, *Winthrop* and *Mantha* in view of *Tobey, Jr.* (U.S. Pat. No. 5,662,901). Claims 1-7, 9-11, 13, 15-17, 19 and 20 are rejected as obvious over *Maenz*, *Vanderbeke*, *Winthrop* and *Mantha* with *Nielsen* (U.S. Pat. No. 5,989,600). Claims 1-20 are rejected as obvious over *Maenz* in view of *Cobb* and *Vanderbeke*.

Claims 1-4 and 11-20 are cancelled above. Claim 5 is amended and new claims 21-25 are added. Support for the added components of dependent claims 21-25 is found in paragraph [45] of the specification. Claims 5-10 and 21-25 are now pending. The cancellation of claims 1-4 and 11-20 moots the § 112 rejection of claims 11-14, the §102 rejection of claims 1, 3, 11, 13, 15-17, 19 and 20 over *Maenz*, the § 102 rejection of claims 11, 13 and 14 over *Barendse*, and the § 103 rejection of claims 11-14 over *Barendse* in view of *Cobb*.

In view of the above amendments, reconsideration and withdrawal of the rejections are respectfully requested.

A. § 103 Rejection of Claims 1-7, 9, 10, 11, 13, 15-17, 19 and 20 over *Maenz* with *Vanderbeke*, *Winthrop*, and *Mantha* is Addressed

The cancellation above of claims 1-4 and 15-20 renders moot the above rejection of claims 1-4, 15-17, 19 and 20, so that the rejection is now only applicable to claims 5-7, 9 and 10.

Method claim 5 is amended above to recite the steps of:

applying to the feed a dry exogenous phytase enzyme and a dry exogenous cellulase enzyme to form a feed mixture consisting essentially of the feed and the dry exogenous enzymes; and
feeding the feed mixture to ruminants.

Support for this amendment is found in the example at paragraph [45].

It is important to note that the claimed feed mixture is formed by applying dry enzymes to the feed and the resulting dry feed mixture is fed to ruminants.

Maentz teaches away from this approach (1) at page 2, line 25, by reporting that such *in vivo* conversion carried out by adding phytase to phytate-containing foods has proven to be only partially effective, and (2) proposing his slurry method as a preferred alternative. *Maenz* thus provides no motivation to apply dry phytase and dry cellulase to feed and feed the resulting mixture to ruminants. *Maenz* only suggests mixing additional enzymes in the context of the claimed slurry method.

The unexpected results obtained with the present invention—that one can materially increase phosphorus uptake in ruminants without substantial feed preapplication, by just adding dry phytase and cellulase enzymes to the feed — would be materially affected by adding water to form a feed slurry. By doing so, pre-digestion of phytates would occur. Since the “consisting essentially of” transition phrase limits the scope of the claim to the specified materials or steps “and those that do not materially affect the basic and novel characteristic(s)” of the claimed invention,” MPEP § 2111.03, references which teach the addition of other constituents which materially affect the present combination, should be considered to teach away from the feed mixture used in the method of amended claim 5 and dependent claims 6-10.

More particularly, *Maenz* teaches a slurry—a wet formulation, in which dried food is treated with enzymes, water and an organic solvent. Pre-digestion of the feed takes place in the wet enzyme slurry formed with the feed, so that the food product subsequently fed to the animals contains inorganic phosphate which is digestible by monogastric animals, to which *Maenz* is directed.

Moreover, to the extent that any of *Vanderbeke*, *Winthrop*, or *Mantha* actually teach a dried enzyme extract, there is no motivation to modify *Maenz* to use a dried enzyme extract to accomplish a phytate to inorganic phosphate conversion prior to animal ingestion, as such breakdown would not be expected to occur in the absence of liquid/slurry formulation fundamental to *Maenz*.

In the absence of such motivation to combine references, *prima facie* obvious is not established by a § 103 rejection of claims 5-7, 9 and 10, based on a combination of *Maenz* taken with *Vanderbeke*, *Winthrop*, or *Mantha* or any combinations thereof. Thus, withdrawal of the rejection is respectfully requested.

B. § 103 Rejection of Claims 5-10 over *Maenz* with *Vanderbeke*, *Winthrop*, *Mantha* and *Tobey, Jr* is Addressed

Remaining claims 5-10 are rejected as obvious over *Maenz*, *Vanderbeke*, *Winthrop* and *Mantha* in view of *Tobey*. The rejection is respectfully traversed.

While *Tobey* does teach enzyme formulations containing the recited enzymes, there is no motivation to combine *Tobey* with *Maenz* in view of the fundamental teaching of *Maenz*—a slurry applied to animal feed to predigest phytates in the feed to inorganic phosphates, prior to consumption of the feed.

In the absence of such motivation to combine references, *prima facie* obvious is not established by a § 103 rejection of claims 5-10 based on a combination of *Maenz* taken with *Vanderbeke*, *Winthrop*, *Mantha* and *Tobey, Jr.* or any combinations thereof. Accordingly, withdrawal of the rejection is respectfully requested.

C. § 103 Rejection of Claims 5, 6, 9 and 10 over *Maenz* with *Vanderbeke*, *Winthrop*, and *Mantha* with *Nielsen* is Addressed

The § 103 rejection of remaining claims 5, 6, 9 and 10 over *Maenz* with *Vanderbeke*, *Winthrop*, and *Mantha* with *Nielsen* is respectfully traversed.

As discussed above, *Maenz* teaches a slurry—a wet formulation, in which dried food is treated with enzymes. *Nielsen* is relied upon for teaching sequential steps. However, in the absence of motivation to combine the listed references with *Maenz*, one does not arrive at the claims at issue, which recite dry phytase and dry cellulase applied directly to dry feed to form a feed mixture consistently essentially of those ingredients, which is then fed to the ruminants. Thus, *prima facie* obvious is not established by a § 103 rejection of claims 5, 6, 9 and 10 based on a combination of *Maenz* taken with *Vanderbeke*, *Winthrop*, *Mantha* and *Nielsen*. Withdrawal of the rejection is respectfully requested.

D. § 103 Rejection of Claims 5-10 over *Maenz*, *Vanderbeke* and *Cobb* is Addressed

The rejection of claims 5-10 as obvious over *Maenz*, *Vanderbeke*, and *Cobb* is respectfully traversed. As discussed above, the fundamental teaching of *Maenz*—the use of a slurry applied to animal feed to predigest phytates in the feed to inorganic phosphates, prior to consumption of the feed—would not be achieved if one were to apply the dry phytases of *Vanderbeke* with enzymes from

the extracts of *Cobb*. Accordingly, there is no motivation to modify *Maenz* with the teachings of *Vanderbeke* and *Cobb* to obtain the claimed invention in which a feed composition consisting essentially of dry phytase and dry cellulase applied to the dry feed which is then directly fed to ruminants.

In the absence of such motivation to combine references, the combination of *Maenz* taken with *Vanderbeke*, and *Cobb* cannot be maintained. Accordingly, claims 5-10 are non-obvious over such a combination, making withdrawal of the rejection proper and respectfully requested.

E. Conclusion

Should any issues remain, the Examination is asked to kindly telephone the undersigned.

Respectfully submitted,

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